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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,578	07/25/2003	Kunihiko Iizuka	1248-0663P	9554
2292	7590	11/24/2006	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			TSE, YOUNG TOI	
		ART UNIT	PAPER NUMBER	
		2611		

DATE MAILED: 11/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/626,578	IIZUKA, KUNIHIKO	
	Examiner YOUNG T. TSE	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 25 July 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-6, 9 and 20 is/are rejected.
- 7) Claim(s) 7-8 and 10-19 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 25 July 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>20030725 and 20061025</u>	5) <input type="checkbox"/> Notice of Informal Patent Application
	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the digital to analog converter as recited in claim 15 (see figure 7) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet"

pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities: at page 16, line 7, "Fig. 1" should be "Fig. 5". Appropriate correction is required.
4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

5. Claims 1-20 are objected to because of the following informalities:

In claim 1, line 6, "an integrator A for integrating an output (i) from" should be "a first integrator for integrating an output of"; line 8, "(ii) from the" should be "of the first"; and line 10, "(iii) from the quantizer back to the integrator A" should be "of the quantizer back to the first integrator".

In claim 2, lines 3-6, "the output (i) to the output (iii) having passed through the negative feedback path and supplies the outputs (i) and (iii), which have been added to each other, to the integrator A" should be "the output of the multiplier to the output of the quantizer and supplies an output to the first integrator".

In claim 3, line 3, "an integrator B for integrating the output (iii)" should be "a second integrator for integrating the output of the quantizer".

In claim 7, line 2, "a pulse train" should be "the pulse train".

Wherein claims 4-6 and 8 depend upon claim 1.

In claim 9, line 8, "an integrator A for integrating an output (i) from" should be "an integrator for integrating an output of"; line 10, "(ii) from the" should be "of the"; and line 13, "(iii) from the quantizer back to the integrator A" should be "of the quantizer back to the integrator".

In claim 11, line 6, "(a) from" should be "of"; line 8, "(b) from" should be "of"; line 10, "(c) from" should be "of"; line 12, "(d) from" should be "of"; and line 15, "(e) from" should be "of".

In claim 13, lines 2-5, "the output (c) to the output (e) having passed through the negative feedback path and supplies the outputs (c) and (e), which have been added to each other, to the second integrator" should be "the output of the sampling circuit to the output of the quantizer and supplies an output to the second integrator".

In claim 14, line 3, "(e)" should be "of the quantizer".

In claim 18, line 2, "a pulse train" should be "the pulse train".

Wherein claims 12, 15-17 and 19 depend upon claim 11.

In claim 20, line 7, "an integrator A for integrating an output (i) from" should be "an integrator for integrating an output of"; line 9, "(ii) from the" should be "of the"; and line 12, "(iii) from the quantizer back to the integrator A" should be "of the quantizer back to the integrator".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-6, 9 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Ignjatovic et al. U.S. Patent No. 6,707,409 (hereinafter “Ignjatovic”).

Ignjatovic discloses a delta sigma modulator in Figs. 2A to 2C for generating an output signal from an input signal.

With respect to claims 1, 9 and 20, the delta sigma modulator comprises a multiplier (206) for multiplying an input signal (102) by a predetermined time-series signal (202); a first integrator (210-1) for integrating an output of the multiplier; a quantizer (108) for quantizing an output of the first integrator; and a negative feedback path (110) for negatively feeding an output of the quantizer back to the first integrator.

With respect to claim 2, the delta sigma modulator further comprises an adder (208) which adds the output of the multiplier and supplies an output to the first integrator.

With respect to claim 3, the delta sigma modulator further comprises a second integrator (212) for integrating the output of the quantizer.

With respect to claim 4, the delta sigma modulator further comprises a digital to analog converter (110).

With respect to claims 5-6, the input signal and the sampling clock are impulse train or PPM signal.

Allowable Subject Matter

8. Claims 11-19 would be allowable if rewritten or amended to overcome the objection(s) set forth in this Office action.

9. Claims 7-8 and 10 would be allowable if rewritten to overcome the objection(s) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

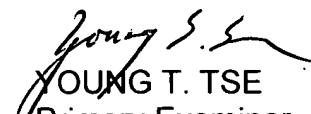
Ichimura et al. is related to a digital signal processing method and apparatus for performing signal processing in an amplitude direction on an input signal digitized with a small number of bits.

Avital et al. is related to a reduced complexity correlator that enables the re-use of the most complex portions of a correlator, namely the multiplier and adder.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOUNG T. TSE whose telephone number is (571) 272-3051. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



YOUNG T. TSE
Primary Examiner
Art Unit 2611